

6.5

Parts of Similar Triangles

Ex:

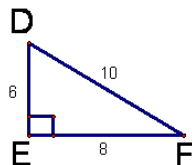
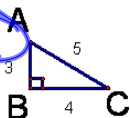
Scale factor

 $\triangle ABC$ P = $\triangle DEF$ P =

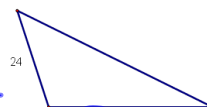
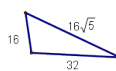
Ratio of perimeters

$$\frac{12}{24} = \left(\frac{1}{2}\right)$$

Scale Factor
 $\frac{3}{6} = \frac{1}{2}$



Theorem 6.7-Proportional Perimeters Theorem-If two triangles are similar, then the perimeters are proportional to the measures of the corresponding sides.

The \triangle s are \sim .Find the perimeter of the larger \triangle 

S.F. $\frac{2}{3}$
 $\frac{16}{24}$

$$P = 48 + 16\sqrt{5}$$

$$P = ?$$

$$\frac{2}{3} = \frac{48 + 16\sqrt{5}}{P}$$

$$2P = 3(48 + 16\sqrt{5})$$

$$2P = 144 + 48\sqrt{5}$$

$$\frac{2P}{2} = \frac{144 + 48\sqrt{5}}{2}$$

$$P = 72 + 24\sqrt{5}$$

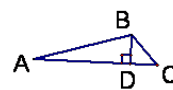
Special segments of similar triangles

Theorem 6.8-If two triangles are similar, then the measures of the corresponding **altitudes** are proportional to the measures of the corresponding sides.

Theorem 6.9-If two triangles are similar, then the measures of the corresponding **angle bisectors** are proportional to the measures of the corresponding sides.

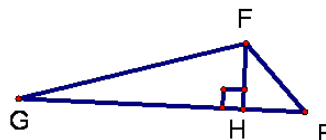
Theorem 6.10-If two triangles are similar, then the measures of the corresponding **medians** are proportional to the measures of the corresponding sides.

Thm. 6.8



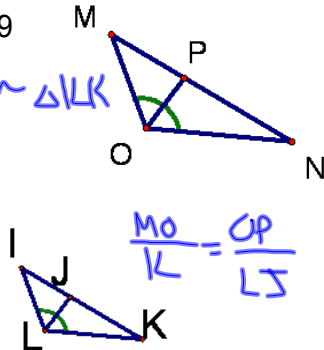
$$\triangle ABC \sim \triangle GFE$$

$$\frac{AB}{GF} = \frac{BD}{FH}$$

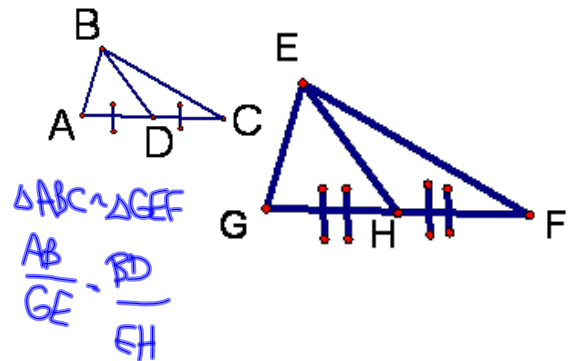
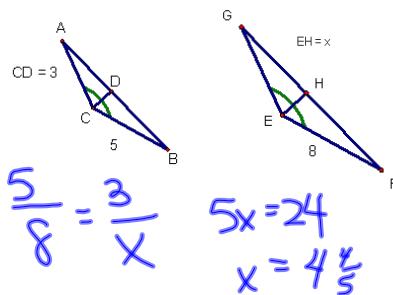


Thm. 6.9

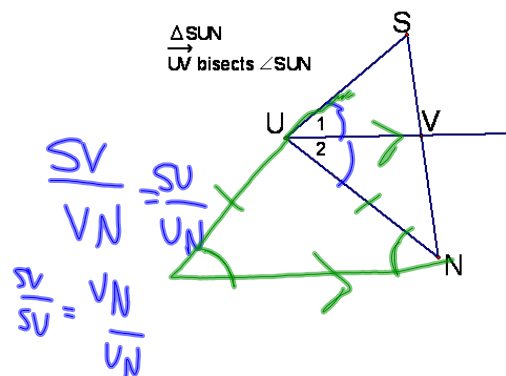
$$\triangle MON \sim \triangle LK$$

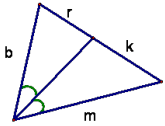


Thm 6.10

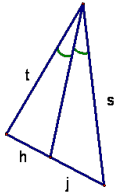

 $\triangle ABC \sim \triangle GFE$ What is EH?


Theorem 6.11-Angle Bisector Proportion Theorem-an angle bisector in a triangle separates the opposite side into segments that have the same ratio as the other two sides.

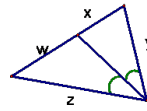




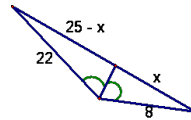
$$\frac{r}{k} = \frac{b}{m}$$



$$\frac{h}{j} = \frac{t}{s} \quad \frac{h}{t} = \frac{j}{s}$$



$$\frac{z}{y} = \frac{w}{x}$$



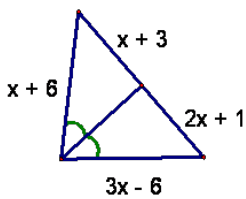
$$\frac{11 \cdot 22}{4 \cdot 8} = \frac{25-x}{x}$$

$$4(25-x) = 11x$$

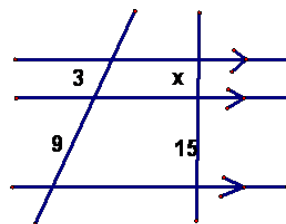
$$x = 6\frac{2}{3}$$

$$100 - 4x = 11x$$

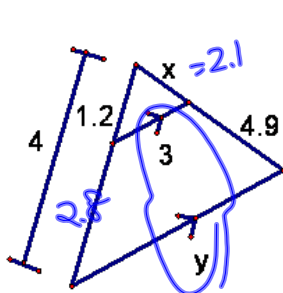
$$100 = 15x$$



$$\frac{x+6}{3x-6} = \frac{x+3}{2x+1}$$



$$\frac{3 \cdot 9}{5 \cdot 15} = \frac{3}{x} \quad x = 5$$



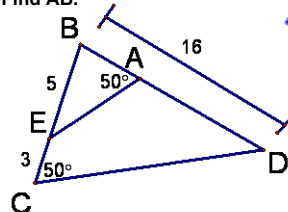
$$\frac{x}{4.9} = \frac{1.2}{2.8}$$

$$x = 2.1$$

$$\frac{3}{y} = \frac{1.2}{4}$$

$$y = 10$$

Find AB.



$$\triangle ABE \sim \triangle CBD$$

$$\frac{AB}{CB} = \frac{BE}{BD}$$

$$\frac{x}{8} = \frac{5}{16}$$

$$x = 2.5$$

HW

~~p312-313 #s 14-18, 20, 21, 33, 34~~

p320-321 #s 10, 11, 14, 22-24